

PATENT SPECIFICATION

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COMPLETE SPECIFICATION

DRAWINGS ATTACHED

Feeding and Marshalling Machines

We, JAMES PASCALL LIMITED, a British Company, of Streatham Road, Mitcham, Surrey, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement:—

This invention relates to apparatus for delivering batches of articles such as sweets.

It is an object of the invention to provide an apparatus which will deliver batches of sweets each of which contains an equal number of sweets and consists of exactly the same assortment of varieties. The apparatus may conveniently be associated with a sweet wrapping and/or packing apparatus.

According to the present invention, there is provided a batch delivery apparatus comprising a plurality of containers for articles, a main conveyor adapted to receive articles from the outlets of the containers, partitions co-operating with the conveyor to define a plurality of channels each of which can receive articles from one of the outlets, a stop disposed transversely of the conveyor and spaced from the ends of the partitions remote from the containers, the said stop being arranged to cause articles to accumulate in the channels, and a transfer conveyor movable transversely of the main conveyor to remove one article from each of said channels to form the said batch.

In the accompanying drawings:

Figure 1 is a sectional elevation through part of an apparatus according to a preferred embodiment of the invention;

Figure 2 is a plan view of the same part of the apparatus;

Figure 3 is a scrap sectional view of part of a hopper of the apparatus; and

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Figure 4 is a front elevation.

The apparatus illustrated in the drawings is intended to deliver batches of assorted sweets of square or rectangular tablet form to a sweet wrapping or packing machine. It comprises a plurality of hoppers arranged side by side and adapted to supply sweets. Each hopper has a bottom which slopes upwards towards an outlet and the upper run of an endless conveyor travels up the sloping bottom of the hopper. Each conveyor includes a plurality of flights or pusher members adapted to engage behind sweets and advance them towards the outlet of a hopper. The flights are arranged to travel between vertical guide plates at the bottom of the hopper. These guide plates are so spaced from each other that sweets can only pass between them when in the edgewise position and they are also arranged so that the tops of the flights can protrude into the hopper at the deepest end of the hopper so as to move the mass of sweets, but so that the flights are wholly within the guides before they reach the outlet end of the hopper thereby to ensure that a mass of sweets is not pushed towards the outlet. Agitators are provided to vibrate the upper runs of the conveyors so as to assist the feeding of sweets between the flights. Discs are attached to the agitators and project into the separate hoppers so as to assist the feeding and movement of the sweets in the hoppers. All the conveyors are driven at a uniform speed through a manually operable clutch.

Discharge chutes lead from the hoppers to the upper run of a main conveyor in the form of an endless belt. These chutes converge towards the centre of the belt and sweets can fall from the hoppers on to the upper surface of the conveyor

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8. Partitions or guides 9 are arranged above the surface of the conveyor 8 and have parallel portions which define a plurality of parallel adjacent channels on the top of the conveyor, each of these channels receiving sweets from one of the chutes 7. As sweets 2 are advanced by the conveyor 8, the first sweet in each channel engages a stop 10 running transversely of the ends of the channels so that the sweets are caused to accumulate at the ends of the channels. The ends of the partitions 9 are spaced from the stop 10 by a distance slightly greater than the width of one sweet.

15 A transfer conveyor 11 is mounted above the main conveyor 8 and is endlessly movable in a direction at right angles to the direction of movement of the main conveyor so as to displace sweets transversely from the channels defined by the partitions 9. The conveyor 11 is provided with flights 12 which are spaced from each other by a distance equal to the overall width of all the channels and engage behind an edge of the rearmost sweet in the direction of movement of the transfer conveyor to push that sweet and all the other sweets in front of it transversely of movement of the main conveyor so as to deliver the sweets as a batch to a wrapping and/or packing machine. The transfer conveyor 11 is driven through a manually operable clutch and a slipping clutch is also provided so that sweets will not be broken if jamming occurs.

In order to ensure that the sweets arrive at the stop 10 in the flat, i.e. face downwards, condition, a guide plates 13 are adjustably secured between side walls of the chutes 7, the distance between these side walls being slightly greater than the width of the flights 4. A shaft 14 of square cross-section is arranged across the conveyor 8 and is spaced above the conveyor by a distance such that sweets can only pass beneath it in the flat condition. The shaft 14 rotates in the counter-clockwise direction. Guide rails 15 are provided above the channels defined by the partitions 9 in such a position that sweets can only travel beneath them in the flat condition.

A guide plate 16 is arranged parallel to the stop 10 and a guide rail 17 above and

parallel to the transfer conveyor 11 to maintain the sweets in position as they travel on the transfer conveyor.

In operation the hoppers 1 are charged with sweets of the desired flavours. When a sufficient number of sweets has been accumulated on the main conveyor 8, the transfer conveyor 11 is set in motion to deliver batches of identically assorted sweets.

WHAT WE CLAIM IS:—

1. A batch delivery apparatus comprising a plurality of containers for articles, a main conveyor adapted to receive articles from the outlets of the containers, partitions co-operating with the conveyor to define a plurality of channels each of which can receive articles from one of the outlets, a stop disposed transversely of the conveyor and spaced from the ends of the partitions remote from the containers, the said stop being arranged to cause articles to accumulate in the channels, and a transfer conveyor movable transversely of the main conveyor to remove one article from each of said channels to form the said batch.

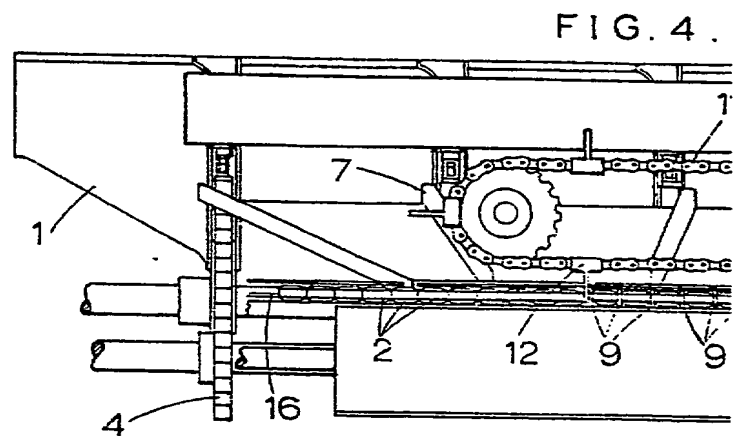
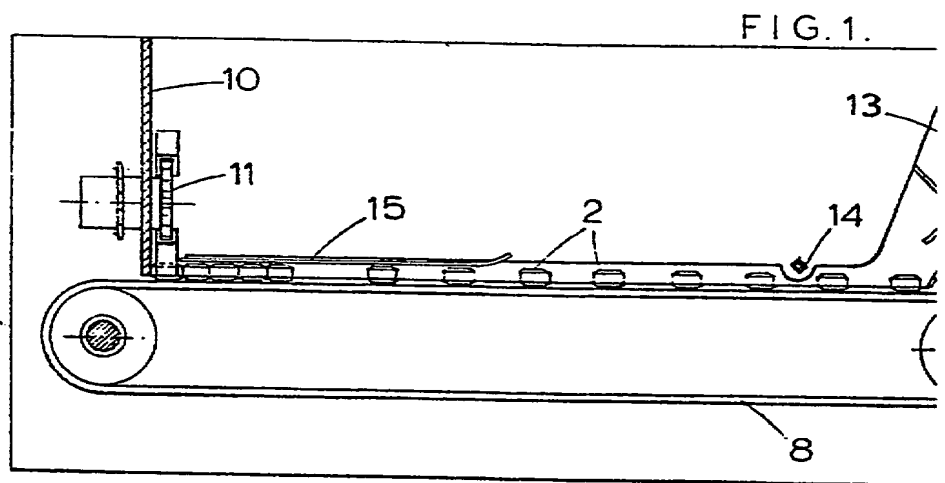
2. An apparatus as claimed in claim 1, wherein each container is a hopper having at its bottom an endless conveyor having an inclined upper run movable upwards towards an outlet, each of the said conveyors being provided with a plurality of flights or pushers adapted to engage behind an article to advance it towards the outlet.

3. An apparatus as claimed in claim 2, wherein means are provided for vibrating the upper runs of the conveyors in the hoppers thereby to assist in feeding articles between the flights.

4. An apparatus as claimed in either of claims 2 or 3, for handling articles of square or rectangular tablet form wherein guides are provided for ensuring that the articles travel face downwards on the main conveyor.

5. A batch delivery apparatus substantially as described with reference to the accompanying drawings.

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 SHEET 1

FIG. 1.

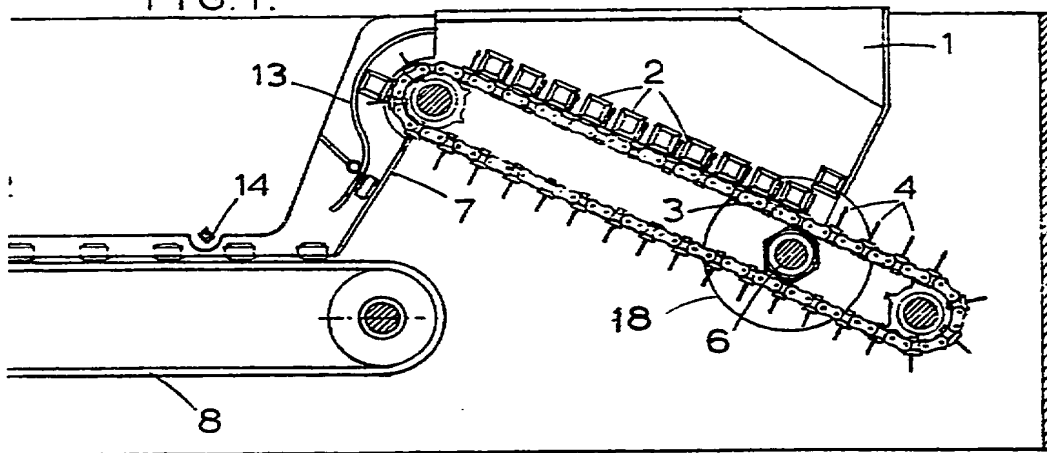
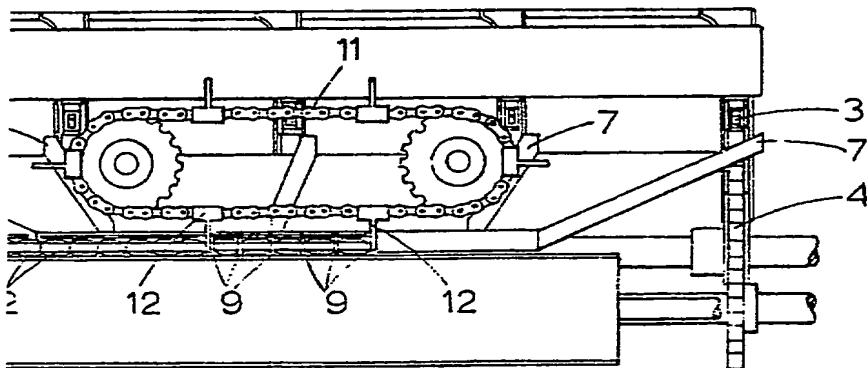
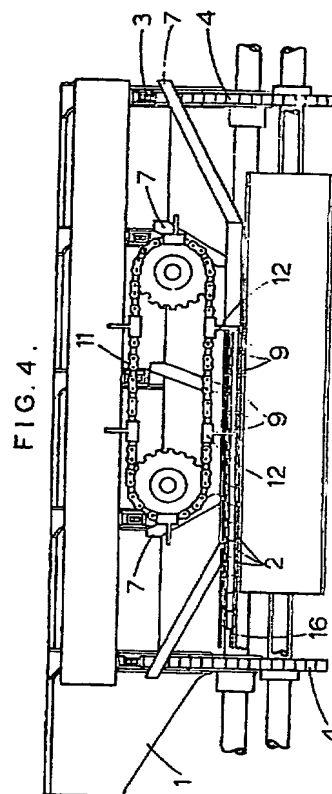
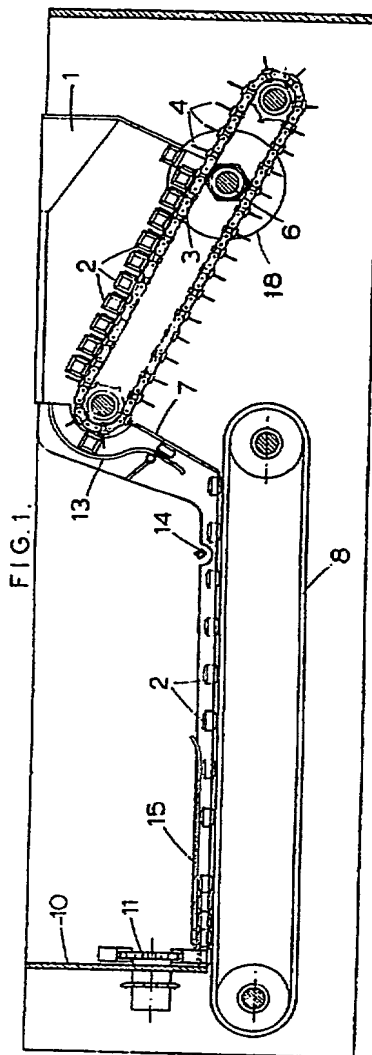
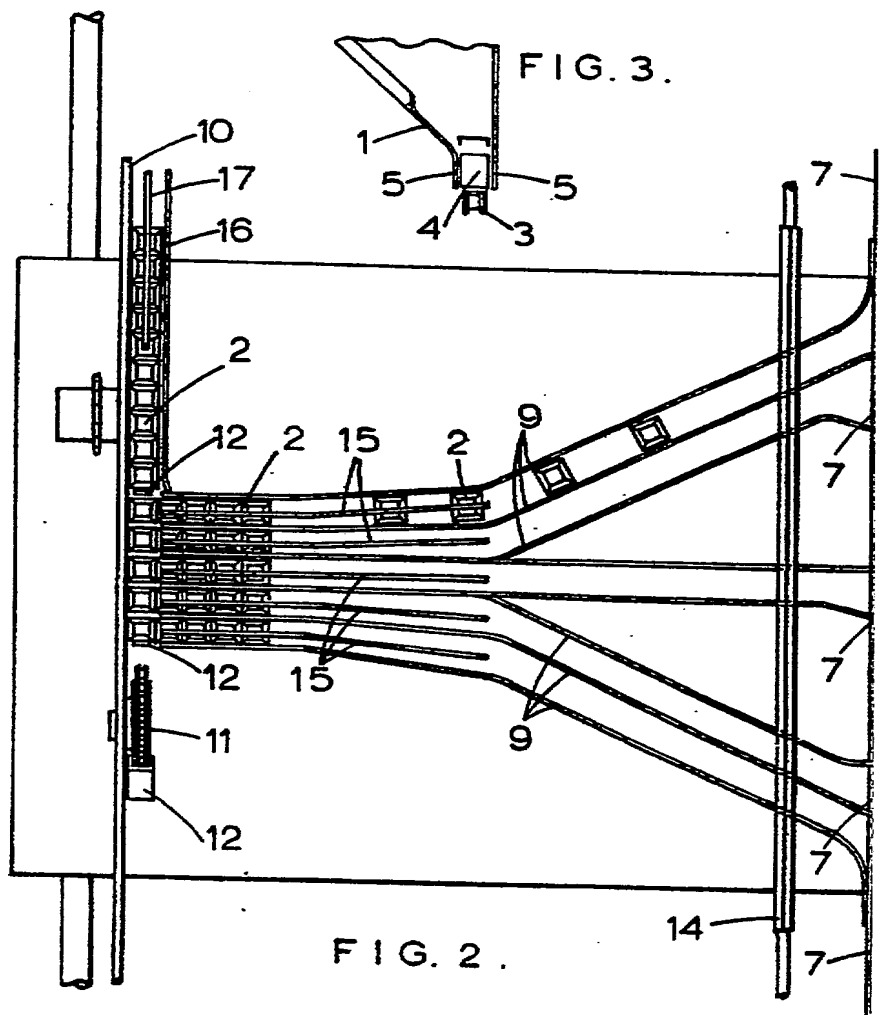


FIG. 4.



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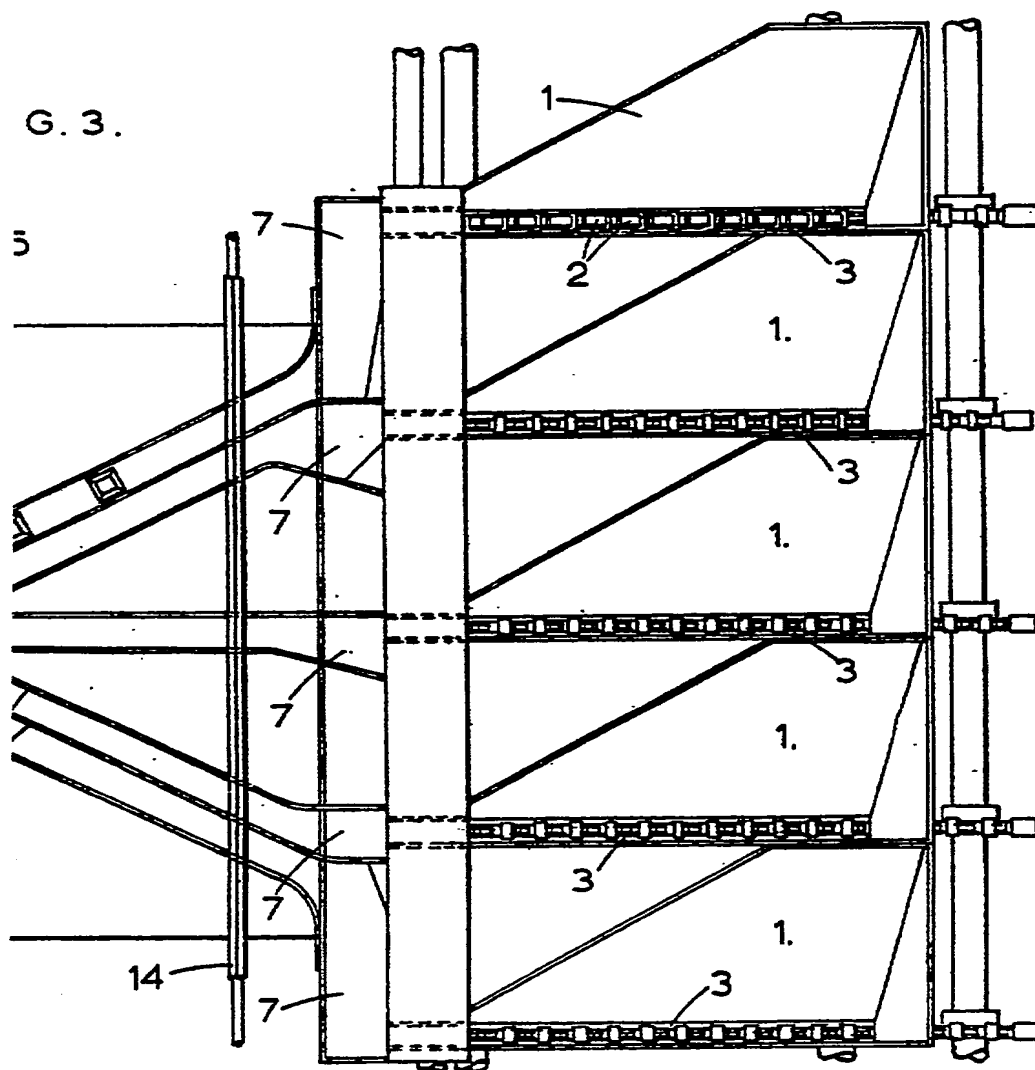
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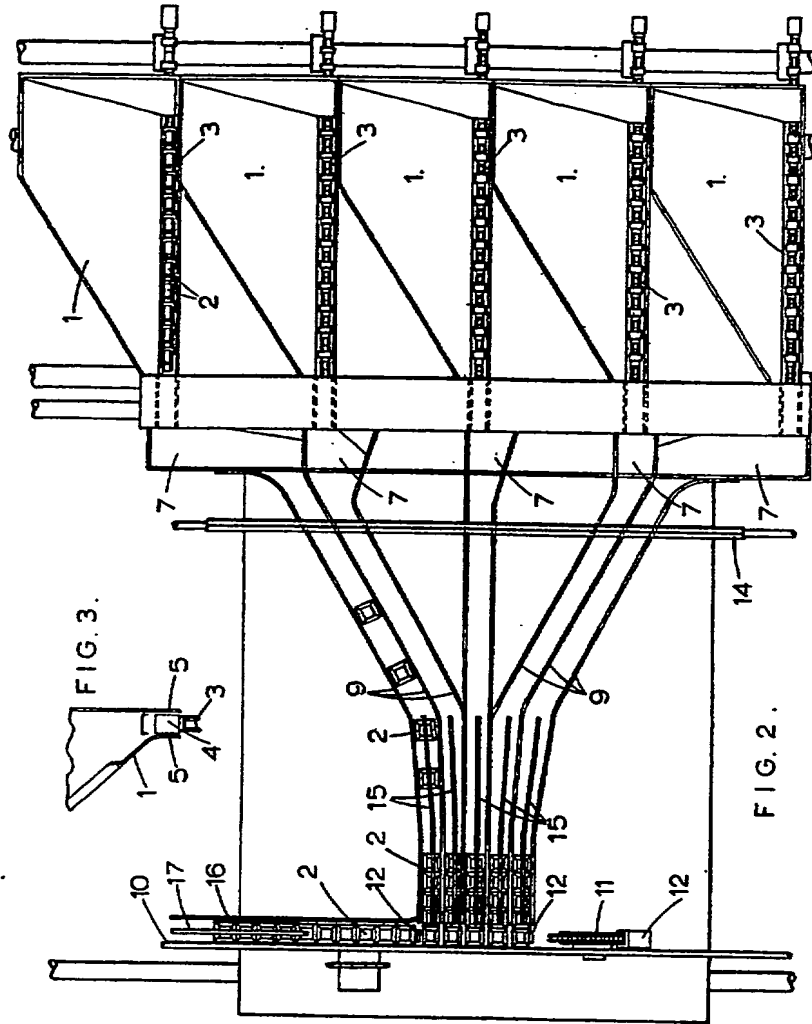
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SHEET 2

G. 3.



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